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**A NEW SPECIES OF RHYACOPHILA, DESCRIBED
FROM METAMORPHOTYPES (RHYACOPHILIDAE; TRICHOPTERA).**

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When the metamorphotype method was first proposed, mention was made of several advantages peculiar to it (M. Milne, 1939). A further point in its favor has become apparent recently while studying metamorphotypes of the genus *Rhyacophila* (Rhyacophilidae).

In *Rhyacophila*, fifty-seven species are recognized from America north of Mexico. A key to the adults of the forty-six known prior to 1936, a synonymic list and illustrations of the genitalia of both sexes (where known) were published by L. Milne (1936). Eleven species have been described since that time (H. H. Ross, 1938, 1939; S. Ling, 1938). Of the fifty-seven, twenty-four are known from males only, twenty-eight have had females associated with males by various means (some questionable), three species were described from the female alone and have not since had males associated (*R. formosa* Bks., *R. mainensis* Bks., and *R. nigrita* Bks.), and eight species of females were illustrated by L. Milne (*op. cit.*) but not named since associated males were lacking. The six Ling species are unrecognizable from their descriptions, and illustrations for them were not published.

Male genitalia in *Rhyacophila* have many excellent specific characters but a large proportion of the species have female genitalia which end in a squarely truncate terminal segment which is apparently devoid of features useful in segregation. Unassociated females having this type of abdominal apex are not identifiable at present. Females not definitely associated with males are also a problem, even though their genitalia have good specific characters. A means of establishing relationships between male and female of the same species was needed. Metamorphotypes fill this need,

since the numerous and strong larval and pupal characters are specific and not secondary sexual features. Thus among mixed metamorphotypes of different species and both sexes, there is no difficulty in separating species irrespective of sex by the larval and pupal characters. Males and females which have these larval and pupal characters the same belong to the same species. This is an association in which the form of the adult genitalia is of no consequence, but it is the needed means of establishing this relationship.

One such group of metamorphotypes having larval and pupal characters identical appears to be an unknown species of *Rhyacophila*. We are naming it *Rhyacophila bruesi* n. sp. in honor of Professor C. T. Brues of Harvard University, who has been most generous of caddis worms and pupae collected on his several summer trips. The new species is represented by two larvae, three male and five female pupae from near Jasper National Park, Alta., Canada, Aug. 15, 1936 (Brues). In addition, we have four larvae and two male pupae from Camp Creek, Mt. Hood National Forest, Oregon, Aug. 2, 1933 (Dimick). A male pupa with its associated sclerites is metamorphotype No. 117, holotype of the species, illustrated herewith. A female pupa is No. 118, the allotype, of which the genitalia are illustrated. A second male and a second female pupa (Nos. 115, 116) and a larva are being deposited in the Museum of Comparative Zoology, Cambridge, Mass. All of these are from the Alberta locality. The other pupae are paratypes, and like the holo- and allotype and larvae, are for the present in the Milne collection.

Pupa: Labrum slightly sclerotized, mandibles strongly sclerotized and serrate; face and vertex with a few long, slender, dark hairs. Pronotal warts and anterior edge of mesonotum with similar dark hairs; intermediate tarsi strongly fringed; spurs 3-4-4. Abdominal sclerites minute; apex membranous, conforming to genitalia; a few short, fine, dark hairs on sternites; gills absent. Length 10 mm., width 2.5 mm.; antennae almost as long as body.

Male: the genitalia, as illustrated, show that this species is closely related to *R. vaccua* Milne (1936) and *R. iranda* Ross (1938).

Female: the genitalia, as illustrated, are different from those of females known hitherto, and show greatest similarity to the type found in *R. vaccua* Milne.

Pupal shelter: Case an elongate, oven-shaped structure, of medium to large sized pebbles irregularly attached; floor of silk only; inner cocoon complete.

Larva: Labrum, frons, epicranium, most of pronotum and

legs, clear yellow. Mandibles, gula and labium, edges and hind lobes of pronotum, and pleura, blackish brown. Head shallow, flat above. Pronotum longer than broad, the posterior lobes well developed, with several ridges. Two long, strong, dark bristles each side on abdominal terga; prolegs yellowish with dark brown markings, the basal segment with one to three long, dark hairs, the claw with a single spine below; gills absent. Length 15 mm., width 2.5 mm.

Illustrations: All structures are shown from dorsal view, except the following: gula, labium and maxilla, left half of each divided genitalic drawing, these all from ventral view; proepimeral spine and proleg claw from right lateral view. The pupal labrum and mandibles were drawn to the larval scale (as shown by line indicating similar magnification of one mm.), the other pupal structures to the scale shown by similar enlargement of one half mm.

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Black-flies bite woodchuck.—On June 5, 1940, a warm, quiet, sunny day, the writer, in company with C. P. Vinal, shot a woodchuck at Westboro, Massachusetts. While the animal was being examined for ectoparasites, several black-flies were observed on the skin of the abdominal wall sucking blood. Two of these flies were determined by Dr. J. C. Bequaert as *Simulium parnassum* Malloch. Mr. Vinal informs me that on numerous occasions he has observed similar flies biting woodchucks shot in Westboro. This is the first record of such an occurrence, and it provides additional information on the feeding habits of black-flies on wild animals, concerning which there is as yet little known—H. S. FULLER, Department of Comparative Pathology and Tropical Medicine, Harvard Medical School, Boston.